

California Regional Water Quality Control Board
North Coast Region

MONITORING AND REPORTING PROGRAM NO. R1-2002-0055

FOR

SISKIYOU COUNTY DEPARTMENT OF PUBLIC WORKS
HAPPY CAMP LANDFILL
CLASS III SOLID WASTE DISPOSAL SITE

Siskiyou County

The Discharger shall maintain water quality monitoring systems that are appropriate for detection monitoring and corrective action, and that comply with Subchapter 3, Chapter 3, Subdivision 1, Division 2, Title 27, CCR, and any other applicable provisions therein.

Compliance with this Monitoring and Reporting Program (MRP), and with the companion Standard Provisions and Reporting Requirements, is ordered by Waste Discharge Requirements (WDRs) Order No. R1-2000-0055. Failure to comply with this MRP, or with the General Monitoring and Reporting Requirements, constitutes non-compliance with the WDRs and with Division 7 of the Water Code, which can result in the imposition of civil monetary liability.

I. REPORTING

The Discharger shall report monitoring data and information as required in this Monitoring and Reporting Program and as required in the General Monitoring and Reporting Requirements. Reports which do not comply with the required format will be rejected and the Discharger shall be deemed to be in noncompliance with the WDRs.

A narrative discussion of the monitoring results, including notations of any water quality violations shall precede tabular summaries of the water quality data. In reporting the monitoring data required by this program, the Discharger shall arrange the data in tabular form so that the date, the constituents, the concentrations, and the units are readily discernible. The data shall be summarized in such a manner so as to illustrate clearly the compliance with waste discharge requirements or the lack thereof. Historical and current monitoring data shall be graphed at least once annually and submitted within the Annual Report. Graphs for the same constituent shall be plotted at the same scale to facilitate visual comparison of monitoring data.

The results of any monitoring done more frequently than required at the locations specified herein shall be reported to the Board in the monitoring report(s) for that period.

A. REQUIRED REPORTS

1. Detection Monitoring and Corrective Action Report

Detection Monitoring and Corrective Action Reports (MRs) shall be prepared and submitted to the Board semiannually by January 15th and July 15th. The reports shall include the results of all monitoring programs listed herein. The established monitoring and reporting period is as follows:

<u>SEMIANNUAL</u>	<u>PERIOD No.</u>	<u>REPORTING DATE</u>
January through June	1	July 15
July through December	3	January 15 Annual Report date

2. Annual Report

An Annual Report, which summarizes the monitoring results for the prior four quarters, shall be submitted to the Board by January 15, annually. The report shall contain both tabular and graphical summaries of the detection and corrective action monitoring data and a discussion of the progress toward re-establishment of compliance with WDRs and the Water Quality Protection Standard (WQPS). In lieu of submitting a separate report, the Annual Report information may be included with the November Sampling Detection Monitoring Report. The Annual Report shall include a map showing any areas of differential settlement, highlighting areas of repeat or severe differential settlement. This map shall be made by or under the direction of a professional civil engineer or registered geologist. The annual report shall contain the results from the leachate collection recovery system (LCRS) annual test in accordance with Section 20340(d), Title 27 CCR. The Annual Report shall also include a summary of the results of the soil gas monitoring program.

3. Water Quality Protection Standard Report

As noted above, any changes to the water quality protection standard are to be included in the Annual Report.

4. Five Year Iso-Settlement Map

The Discharger shall produce an iso-settlement map in November 2005, November 2010, and every five years thereafter until the Executive Officer has determined that differential settlement is unlikely to be of such magnitude as to impair either the Unit's containment features (e.g., final cover) or the free drainage of surface flow. The map shall be submitted to the Regional Water Board with the Annual Report for that year. The iso-settlement map shall accurately depict the estimated total change in elevation of each portion of the final cover's low-hydraulic-conductivity layer. Therefore, for each portion of the landfill, this map shall show the total lowering of the surface elevation of the final cover, relative to the baseline topographic map produced at closure, and shall indicate all areas where visually noticeable differential settlement may have been obscured by grading operations. The map shall be drawn to the same scale and contour interval as the topographic map produced at closure, but showing the current topography of the final cover and featuring overprinted isopleths indicating the total settlement to-date. This map shall be made by or under the direction of a professional civil engineer or registered geologist and be stamped and signed.

5. Annual Erosion Control Report

By November 1, annually, the Discharger shall submit a report to the Executive Officer describing any measures taken to comply with erosion control requirements. This shall include a description of any erosion control measures implemented, and any necessary construction, maintenance, or repairs of precipitation and drainage control facilities. The Executive Officer may delete the requirement for submitting annual erosion control reports upon finding that no erosion control work is necessary prior to the return of winter rains.

6. Constituents-of-Concern (COC)

The results of COC monitoring shall be submitted with, or reported in, the Annual Report for that year.

7. Notification of Release and Re-test

For any WMU, if the results of a detection monitoring program shows that there is a measurably significant increase in an indicator parameter or waste constituents over the WQPS at or beyond the points of compliance (i.e., measurably significant evidence of an exceedence or release), the Discharger shall:

- a. immediately notify the Regional Water Board by telephone or fax of the exceedence,
- b. within seven days of the initial findings, follow up with written notification (or acknowledgment of the Board's finding),
- c. within 30 days of the initial finding, re-sample for the constituent(s) or parameter(s) at the point where the standard was exceeded, and
- d. within 60 days of the initial finding, submit the results of the re-sampling and statistical analysis, indicating whether or not an exceedence or release was confirmed by the re-test.

8. Existing Release - Amended Programs

Within 30 days upon confirmation of an exceedence from an existing release, the Discharger shall submit for Regional Water Board staff approval an amendment to the Corrective Action Program, describing measures planned or taken to mitigate the exceedence. The discharger shall also note any necessary changes to the DMP and Corrective Action Monitoring Program monitoring locations as a result of the exceedence (see Section V.C. herein).

9. Responding to a Release Discovery

Upon verifying a measurably significant evidence of a release from a WMU according to Section 20420(j) of Title 27 and Section I.A.6 of this MRP, the Discharger shall follow the procedures and timeline described in Section 20420(k) of Title 27.

II. MONITORING PROGRAMS

A. ROUTINE MAINTENANCE

The disposal site shall be inspected quarterly. At a minimum, the integrity of the cover material, drainage structures, potential erosion areas, and leachate piping and storage facilities shall be inspected. Inspection logs, problem areas, special occurrences, and corrective actions taken shall be included in the semiannual monitoring reports.

B. CONSTITUENTS OF CONCERN

Except as otherwise indicated in this Order, the Discharger shall monitor each media of the existing landfill unit for applicable Constituents of Concern (per federal Subtitle D, Appendices I and II and State Water Resources Control Board Resolution 93-62). The monitoring locations, analytical methods, and frequency of analysis are as follows:

1. Monitoring Locations

- a. Leachate – Leachate monitoring well scheduled for installation in 2002, or if unable to obtain sample from leachate well, MW-3 shall be sampled in lieu of the leachate monitoring well

2. Monitoring Schedule

TABLE II. B
CONSTITUENTS OF CONCERN MONITORING

<u>Constituents of Concern</u>	<u>Units</u>	<u>Frequency</u>
Carbonate	mg/L	Every 5 years
Bicarbonate Alkalinity	mg/L	Every 5 years
Volatile Organic Compounds (EPA Method 8260)	ug/L	Every 5 years
Semi-Volatile Organic Compounds (EPA Method 8270)	ug/L	Every 5 years
Organochlorine Pesticide, PCBs (EPA Method 8080)	ug/L	Every 5 years
Chlorophenoxy Herbicides (EPA Method 8150)	ug/L	Every 5 years
Organophosphorus Compounds (EPA Method 8141)	ug/L	Every 5 years
Inorganics (dissolved)	mg/L	Every 5 years
MTBE	ug/L	Every 5 years

C. LEACHATE MONITORING

1. Monitoring Locations

The leachate monitoring location is to be established with new well installation in 2002.

2. Monitoring Schedule

Leachate monitoring shall be conducted as specified in Table II.C

TABLE II.C
LEACHATE MONITORING PROGRAM

<u>Parameter</u>	<u>Units</u>	<u>Frequency</u>	<u>Reporting</u>
<i>Field Parameters</i>			
Leachate level in leachate well	Feet/tenths	Monthly	Monthly (for first 12 months after installation)
Leachate level in leachate well	Feet/tenths	Quarterly, February, May, August, and November	Semiannually (after first 12 months)
Volume outhauled	Gallons	Daily, when in progress	Monthly

<u>Parameter</u>	<u>Units</u>	<u>Frequency</u>	<u>Reporting</u>
Specific Conductance	mhos/cm	Annually, November	Annually
pH	pH units	Annually, November	Annually
<i>Monitoring Parameters</i>			
Total Dissolved Solids (TDS)	mg/L	Annually, November	Annually
Chlorides	mg/L	Annually, November	Annually
Fluoride	mg/L	Annually, November	Annually
COD	mg/L	Annually, November	Annually
Sodium	mg/L	Annually, November	Annually
Mineral series	mg/L	Annually, November	Annually
Nitrogen series	mg/L	Annually, November	Annually
CAM metals	mg/L	Annually, November	Annually
Sulfates	mg/L	Annually, November	Annually
Volatile Organic Compounds	ug/L	Annually, November	Annually
<i>Constituents of Concern</i>			
Table II.B constituents	ug/L	Every 5 years	Every 5 years

Upon detection of leachate in a previously dry leachate well, the leachate shall be sampled in accordance with the above schedule and the results included in the monitoring report. If COC constituents are detected that are not already Monitoring Parameters, then the leachate must be re-sampled for those constituents. If confirmed by re-test, then these constituents must be added to the Monitoring Parameter list and analyzed on an annual basis.

Each LCRS shall be hydraulically tested annually to demonstrate that it is still operating in conformance with the WDRs. The results shall be reported to the Regional Water Board in the Annual Report and include comparison with earlier tests made under comparable conditions.

D. GROUNDWATER ELEVATION MONITORING

Groundwater elevations taken prior to purging the well and sampling for Monitoring Parameters shall be used to fulfill the groundwater gradient/direction analyses required. For each monitored groundwater body, the Discharger shall measure the water level in each well and determine groundwater gradient and direction at least quarterly, including the times of expected highest and lowest elevations of the water level for the respective groundwater body. Groundwater elevations for all upgradient and downgradient wells

for a given groundwater body shall be measured within a period of time short enough to avoid temporal variations in groundwater flow which could preclude accurate determination of groundwater gradient and direction. This information shall be included in the semiannual monitoring reports.

III. DETECTION MONITORING

A. GENERAL

The Discharger shall perform Detection Monitoring on all media potentially affected by a release, including surface water, groundwater, and the unsaturated zone. For any given monitored medium, a sufficient number of samples shall be taken from all Monitoring Points and Background Monitoring Points to satisfy the data analysis requirements for a given Reporting Period, and shall be taken in a manner that ensures sample independence to the greatest extent feasible.

The Discharger shall use a Regional Water Board-approved statistical (or non-statistical) procedure to determine whether there has been a measurably significant increase in a constituent over the water quality protection standard, as set forth in Section 20415(e)(5) of Title 27.

B. UNSATURATED ZONE

The landfill does not currently have any landfill gas monitoring probes. Dry groundwater monitoring wells MW-2S and MW-4 shall be used to monitor quarterly for landfill gas. Monitoring will be conducted by normal accepted practice for landfill gas monitoring probes. The landfill gas extraction well shall also be monitored quarterly to determine if landfill gas is being extracted from beneath the landfill cap. The results shall be reported to the Regional Water Board in the semi-annual MRs. In addition, any future Landfill Gas Monitoring Reports conducted for the CIWMB and LEA shall be copied to this agency. All Landfill Gas Probes shall be added to the quarterly monitoring program until such time as it is no longer needed and written concurrence is obtained from Regional Water Board staff.

C. SURFACE WATER

1. Monitoring Locations

The surface water detection monitoring points for Happy Camp SWDS, shown in Attachment "B", are as follows:

Background:	S-1 (To Be Established)
Points of Compliance:	S-2 and S-3

Surface water sampling points S-2 and S-3 are immediately downstream of Silt Fences #2 and #3, respectively. An upgradient background location (S-1) shall be established prior to October 1, 2002.

Samples shall be collected from surface water sampling locations at the frequency and for the parameters specified in Table III.C. Sampling shall begin with the first surface runoff in the fall of each year and in January and March.

2. Monitoring Schedule

The analytes and frequency of surface water monitoring is as follows:

TABLE III. C.
SURFACE WATER MONITORING PROGRAM

<u>Parameter</u>	<u>Units</u>	<u>Frequency</u>
<i>Field Parameters</i>		
pH	pH units	Month of First Runoff, January and March
Specific Conductance	Mhos/cm	Month of First Runoff, January and March
Temperature	°C	Month of First Runoff, January and March
Dissolved Oxygen	Mg/L	Month of First Runoff, January and March
Turbidity	Turbidity units	Month of First Runoff, January and March
<i>Monitoring Parameters</i>		
Chlorides	mg/L	Month of First Runoff, January and March
Ammonia	mg/L	Month of First Runoff, January and March
Carbonate	mg/L	Month of First Runoff, January and March
Bicarbonate	mg/L	Month of First Runoff, January and March
Total Dissolved Solids (TDS)	mg/L	Month of First Runoff, January and March
Total Settable Solids	mg/L	Month of First Runoff, January and March

<u>Parameter</u>	<u>Units</u>	<u>Frequency</u>
Total Suspended Solids	mg/L	Month of First Runoff, January and March
Hardness	mg/L	Month of First Runoff, January and March
Sulfates	mg/L	Month of First Runoff, January and March
Nitrogen Series	mg/L	Month of First Runoff, January and March
Chemical Oxygen Demand (COD)	mg/L	Annually
Total Organic Carbon (TOC)	mg/L	Annually
Biological Oxygen Demand (BOD)	mg/L	Annually
CAM Metals	mg/L	Annually
<i>Constituents of Concern</i>		
Table II. B constituents	mg/L	Every 5 years

The Discharger shall determine at each sampling whether there is a statistically or non-statistically significant increase over water quality protection standards for each parameter and constituent analyzed. If a release is detected at the downstream sampling point, the Discharger shall proceed with an Evaluation Monitoring Program to determine the source(s) and extent of release.

IV. CORRECTIVE ACTION

Each semiannual MR shall contain a report on the effectiveness of the corrective action program, in addition to the other monitoring and reporting requirements.

A. GROUNDWATER

The groundwater surface elevation (in feet and hundredths, M.S.L.) in all wells shall be measured on a quarterly basis and used to determine the velocity and direction of groundwater flow. Additional monitoring wells shall be added to the program as needed.

Currently MW-3 has had a confirmed release of chloroethane, 1, 2-dichloroethene, vinyl chloride, 1,1-dichloroethene, and dichlorodifluoromethane. These monitoring parameters are in Tracking Mode for MW-3. The Discharger shall establish a list of naturally occurring compound that have a confirmed release after establishing a data analysis method for these compounds. The Discharger shall submit changes in monitoring parameter status in accordance with the Site's Waste Discharge Requirements.

1. Monitoring Locations

The groundwater monitoring points for Happy Camp SWDS, shown in Attachment “B”, are as follows:

Background Monitoring Wells: MW-2S and MW-2D
Downgradient Monitoring Wells: MW-3 and MW-4
Points of Compliance Well: MW-3 (also a corrective action point)

MW-2D is also an upgradient background well, but located in a deeper water-bearing unit than the other wells. MW-2D has been monitored in the past, but is not currently part of the monitoring program. Water levels shall be continued to be monitored quarterly in compliance with Title 27 CCR. MW-2S and MW-4 have been dry since installation, but should be sampled if water is present.

Any additional monitoring wells constructed at the site shall be added to the monitoring network. Samples shall be collected from all installed wells at the frequency and for the parameters specified in Table IV.A.

2. Monitoring Schedule

The analytes and frequency of groundwater monitoring is as follows:

**TABLE IV.A.
GROUNDWATER CORRECTIVE ACTION MONITORING PROGRAM**

<u>Parameter</u>	<u>Units</u>	<u>Frequency</u>
<i>Field Parameters</i>		
pH	pH units	Semiannually, May and November
Specific Conductance	Mhos/cm	Semiannually, May and November
Temperature	°C	Semiannually, May and November
Groundwater Elevations	Ft./tenths TOC	Quarterly, February, May, August, and November
Turbidity	Turbidity units	Semiannually, May and November

Monitoring Parameters

Sodium	mg/L	Semiannually, May and November
Magnesium	mg/L	Semiannually, May and November
Calcium	mg/L	Semiannually, May and November
Bicarbonate	mg/L	Semiannually, May and November
Alkalinity	mg/L	Semiannually, May and November
Potassium	mg/L	Semiannually, May and November
Manganese	mg/L	Semiannually, May and November
Total Dissolved Solids (TDS)	mg/L	Semiannually, May and November
Hardness	mg/L	Semiannually, May and November
Chemical Oxygen Demand (COD)	mg/L	Semiannually, May and November
Chlorides	mg/L	Semiannually, May and November
Sulfates	mg/L	Semiannually, May and November
Nitrogen Series	mg/L	Semiannually, May and November
Halogenated VOC's	mg/L	Semiannually, May and November

Monitoring Parameters

Aromatic VOC's	mg/L	Semiannually, May and November
MTBE	mg/L	Semiannually, May and November

V. WATER QUALITY PROTECTION STANDARD

The Water Quality Protection Standard (Standard) consists of the following elements:

- a. Constituents of Concern;
- b. Concentration Limits;
- c. Monitoring Points;
- d. Points of Compliance; and
- e. Compliance Period.

Each of these is described as follows:

A. Constituents of Concern

The Constituents of Concern (COCs) required under Section 20395 of Title 27 shall include all constituent groups identified in Table II.B and specifically listed in Appendices I and II Subtitle D. The Discharger shall monitor all COCs every five years or more frequently as required under the corrective action monitoring program.

B. Concentration Limits

1. General

The Concentration Limit for any given Constituent of Concern or Monitoring Parameter in a given monitored medium (i.e., the uppermost aquifer) at a landfill shall be as follows, and shall be used as the basis of comparison with data from the Monitoring Points in that monitored medium:

- a. The background value established in the WDRs by the Regional Water Board for that constituent and medium;
- b. The constituent's background value, from the Background Monitoring Points for that monitored medium. Either:
 1. The mean (or median, as appropriate) and standard deviation (or other measure of central tendency, as appropriate) of the constituent's background data; or
 2. The constituent's MDL, in cases where less than 10 percent of the background samples exceed the constituent's MDL; or

- c. A concentration limit greater than background, as approved by the Board for use during or after corrective action.

2. Groundwater - background values established by monitoring.

C. Monitoring Points

- 1. Unsaturated Zone** - The discharger shall submit copies of quarterly gas monitoring reports for all landfill gas probes monitored in accordance with the Solid Waste Facilities Permit issued by the CIWMB and Section III B of the MRP.

2. Groundwater - As listed in Table IV.A.

Upon confirmation of an exceedence from an existing release, the Discharger shall transfer the impacted monitoring point(s) from the Detection Monitoring Program (DMP) to the Corrective Action Monitoring Program (CAMP). Upon confirmation that levels in a previously impacted monitoring point has been reduced below concentration limits, the Discharger may, with Regional Water Board staff approval, transfer that monitoring point from the CAMP to the DMP.

D. Points of Compliance

The point(s) of compliance at each groundwater monitoring point is the vertical surface located at the downgradient limit of the WMU that extends through the uppermost aquifer underlying the WMU. The point of compliance for shall be MW-3.

E. Compliance Period

The Compliance period is the number of years equal to the active life of the landfill plus the closure period. Each time the Standard is exceeded (i.e., a release is discovered), the landfill begins a Compliance Period on the date the Board directs the Discharger to begin an Evaluation Monitoring Program. If the Discharger's Corrective Action Program has not achieved compliance with the Standard by the scheduled end of the Compliance Period, the Compliance Period is automatically extended until the landfill has been in continuous compliance for at least three consecutive years.

The Discharger shall implement the above monitoring program on the effective date of this Order.

Ordered by: _____

Susan A. Warner,
Executive Officer

June 27, 2002